SPoRT Overview

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Short-term Prediction Research and Transition (SPoRT) Center

SPoRT is focused on transitioning <u>unique</u> NASA and NOAA observations and research capabilities to the operational weather community to improve short-term weather forecasts on a regional and local scale

Proven paradigm for transition of research and experimental data to "operations"

<u>Benefit</u>

- o demonstrate capability of NASA and NOAA experimental products to weather applications and societal benefit
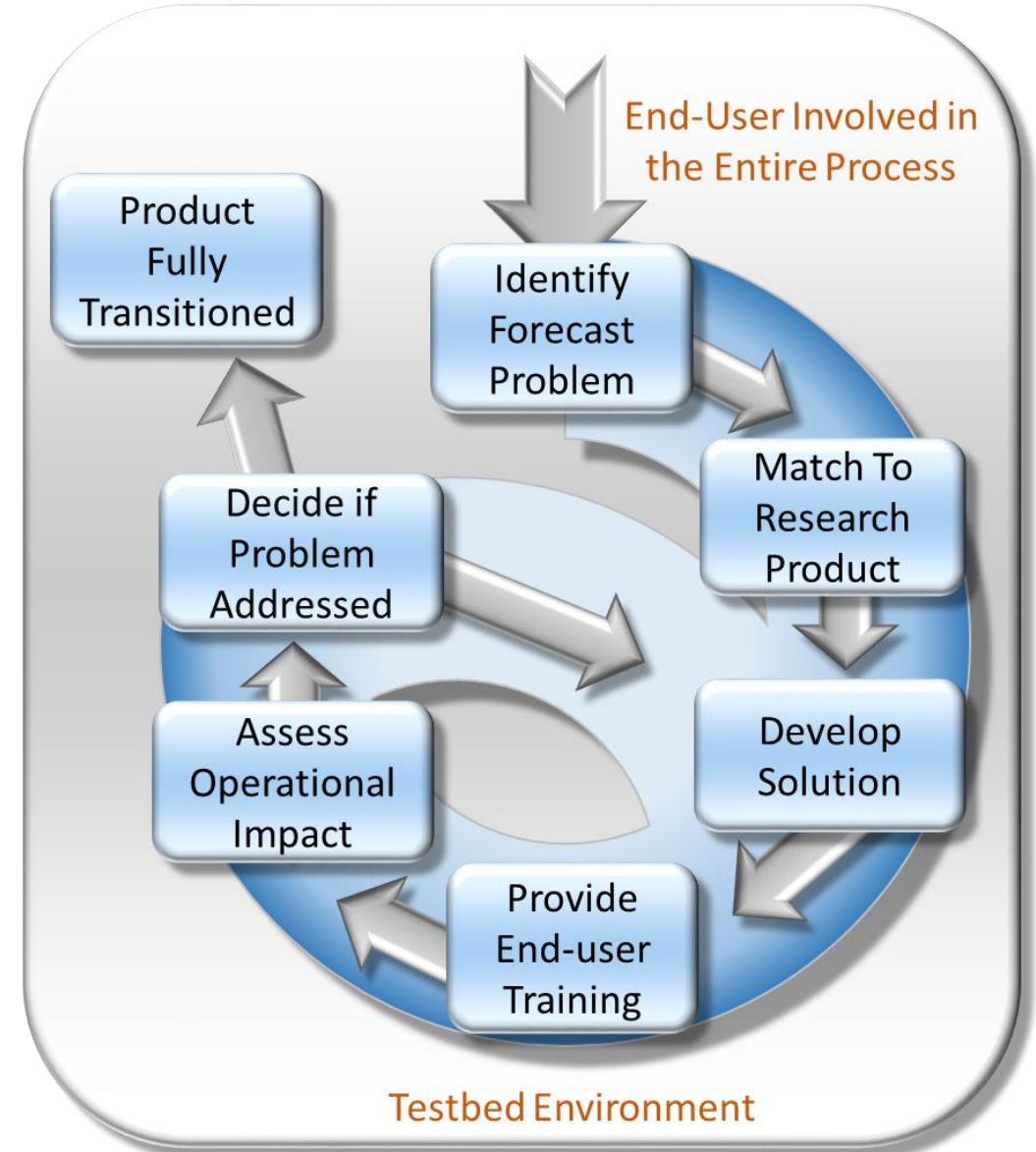- o prepares forecasters for use of data from next generation of operational satellites (JPSS, GOES-R)
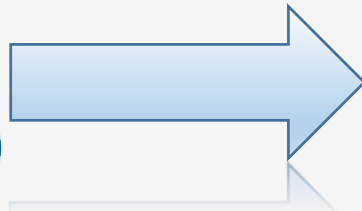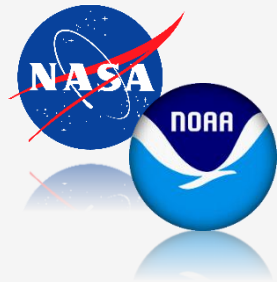
Operational Meteorologists

NASA funding comes from Earth Science Division R&A Program and through awarded proposals; NOAA funding comes from Satellite Proving Ground activities

SPoRT R2O/O2R Paradigm

- Bridge the "Valley of Death"
- Can't just "throw data over the fence"
  - Maintain interactive partnerships with help of specific advocates
  - Integrate into user decision support tools
  - Create product training
  - Perform targeted product assessments

- Concept has been used to successfully transition more than 40 satellite datasets to operational users for nearly 15 years
- Other groups in the community have adopted this paradigm

End-User Involved in the Entire Process

Product Fully Transitioned
Identify Forecast Problem
Match To Research Product
Develop Solution
Provide End-user Training
Assess Operational Impact
Decide if Problem Addressed

Testbed Environment
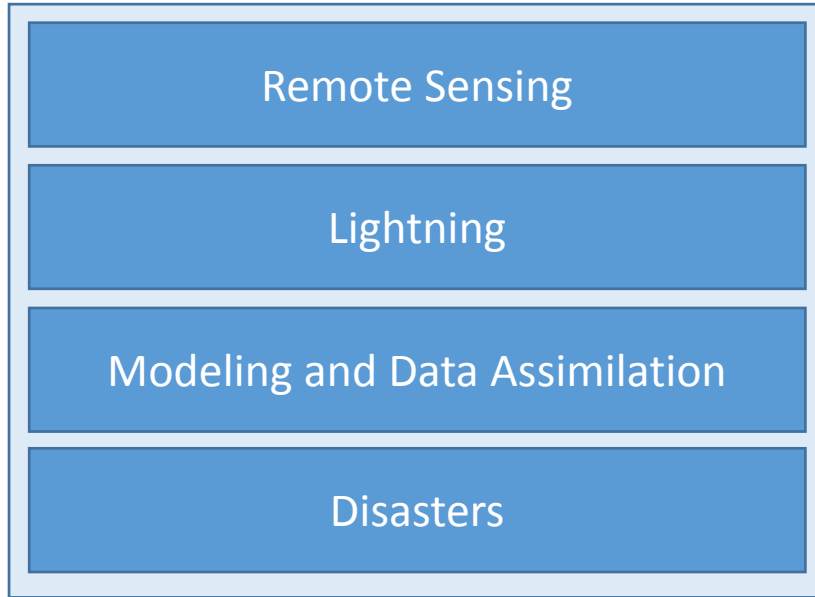
Operational Partnerships

SPoRT collaborates with NOAA Cooperative Institutes to develop and distribute products to partnering National Weather Service WFOs and National Centers, providing unique observation and modeling capabilities to support their daily forecasting operations.

Over 30 NWS WFOs and All Regional Headquarters

NOAA Cooperative Institutes as Data Delivery and Product Development Partners
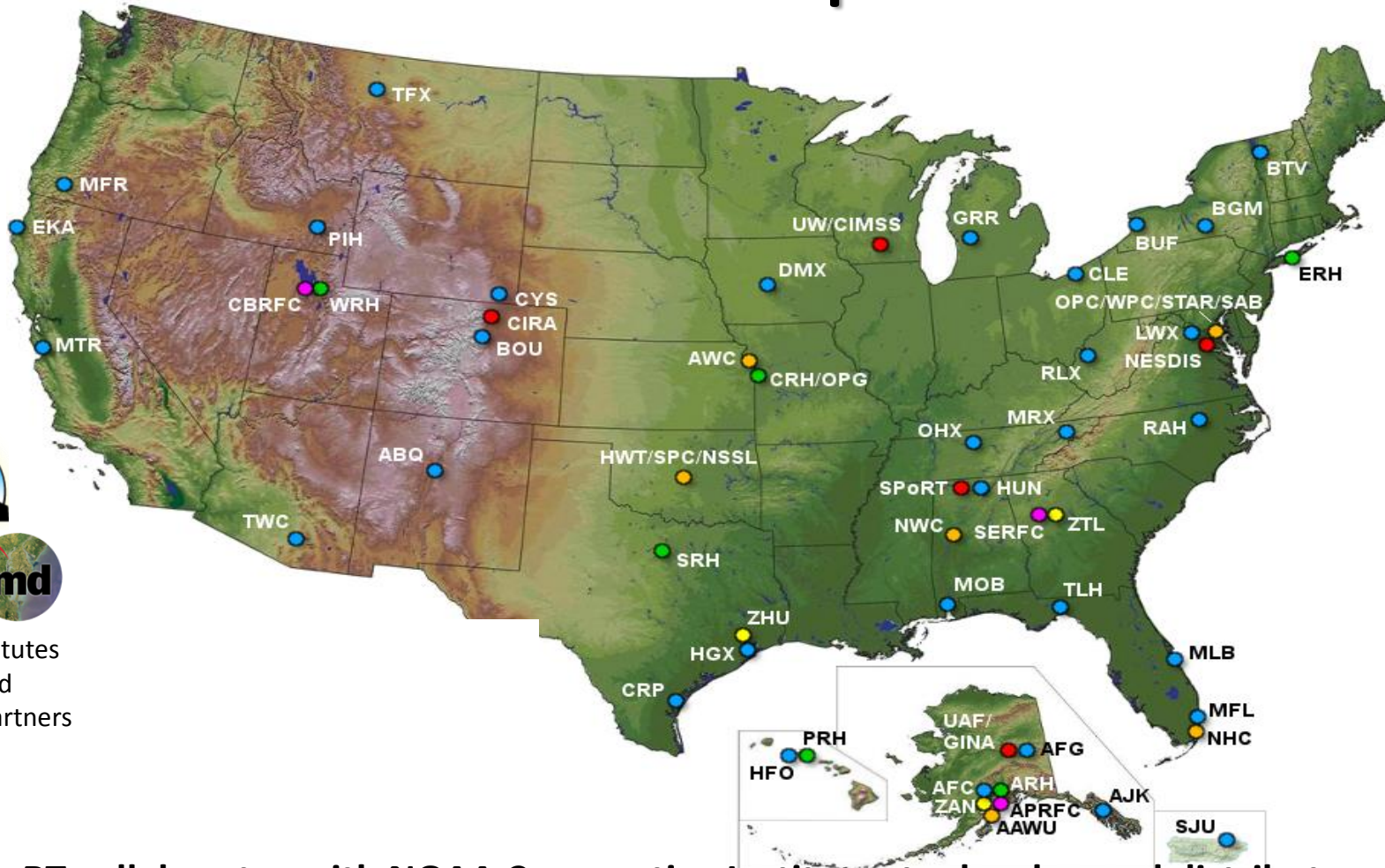
National Centers for Environmental Prediction

Environmental Modeling Center
National Hurricane Center
Weather Prediction Center
Ocean Prediction Center
Aviation Weather Center
Storm Prediction Center

Legend
- Product Development Partner
- National Center Evaluation Partner
- NWS Regional Headquarters
- WFO Collaborative Partner

Data Approach

- SPoRT provides experimental data to NWS users by LDM, FTP, and WMS depending on application
- Not a 24/7 "operational" data provider but do our best to maintain data feeds because product reliability is a key to product demonstration and use by operational forecasters
- Monitor our product ingest and status for all experimental products going to a customer

SPoRT Expertise

Remote Sensing

Lightning

Modeling and Data Assimilation

Disasters

Perform targeted research activities to exploit unique capabilities of NASA satellites and technologies to solve specific weather forecasting challenges

Decision Support Systems

Support for product dissemination to AWIPS, N-AWIPS, WMS, etc.

Transitions, Training, and Assessment
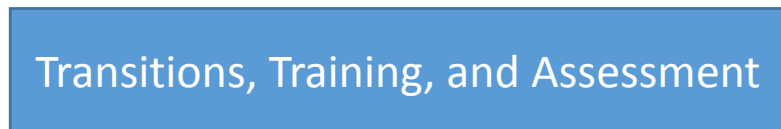
Apply unique R2O/O2R paradigm for transitioning data and obtaining valuable feedback from NWS forecasters

NASA SPORT
Short-term Prediction Research and Transition Center

Multispectral Imagery Products
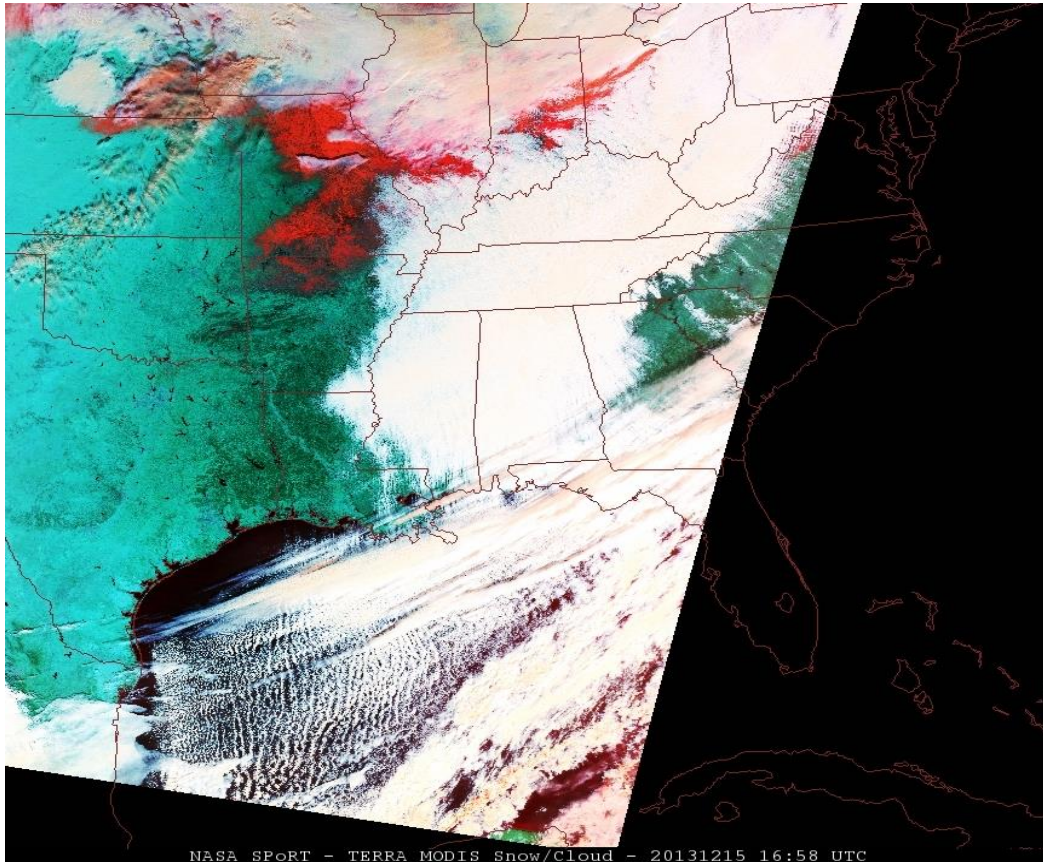
False color RGB image showing locations of snow on the ground (red), bare ground (green), and clouds (white).
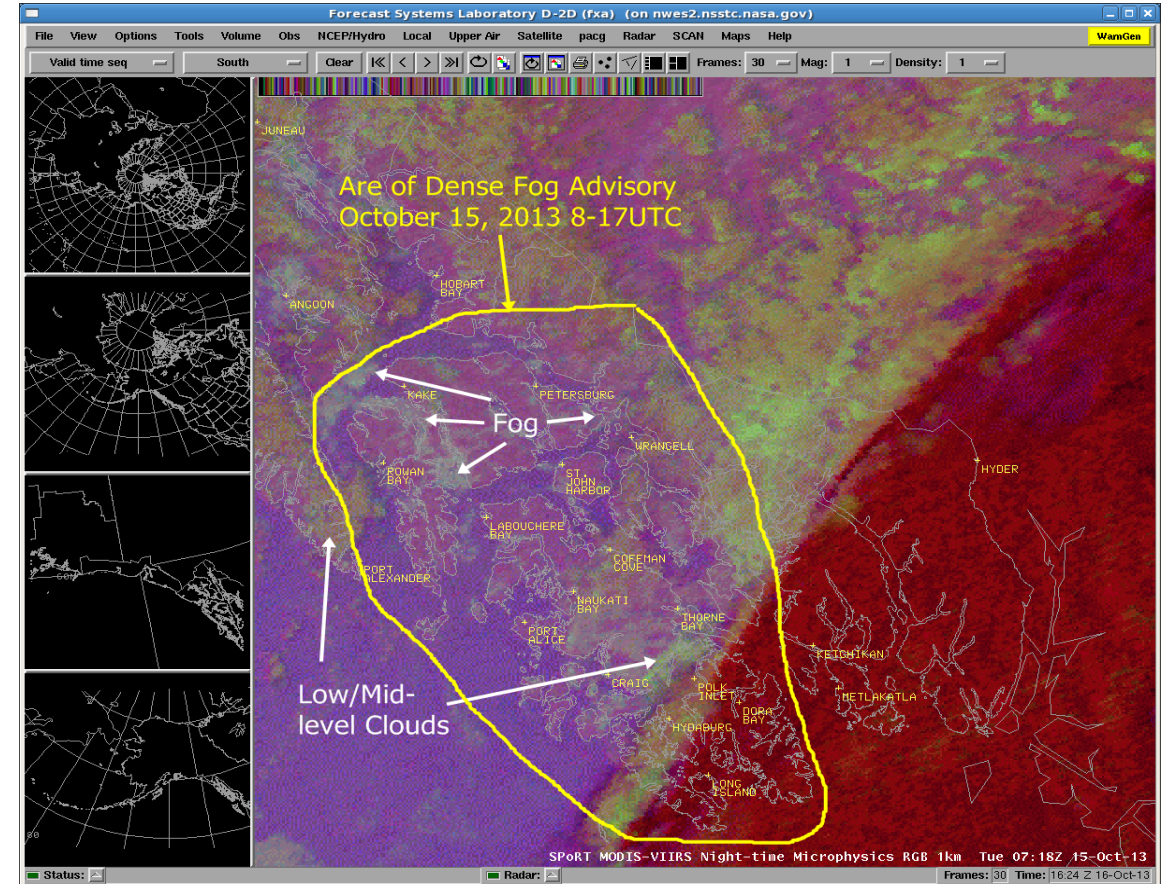
Juneau, AK. 15 October 2013 the NtMicro RGB assists with analysis of fog in the area where Dense Fog Advisory was issued.

- Use of MODIS (left) and VIIRS (right) for value-added multispectral (RGB) imagery
- Forecasters in the U.S. have used these products in preparation for GOES-R
- Same RGB images are made using the JMA Himawari satellite and can be available for use in situational awareness (either from JMA or from SPoRT)

Global Precipitation Measurement (GPM) Rain Rate

0018 UTC — *Atmospheric River from December 2014*

SSMI/S from GPROF showing atmospheric river like event that led to landslides in the Juneau area on 18 July
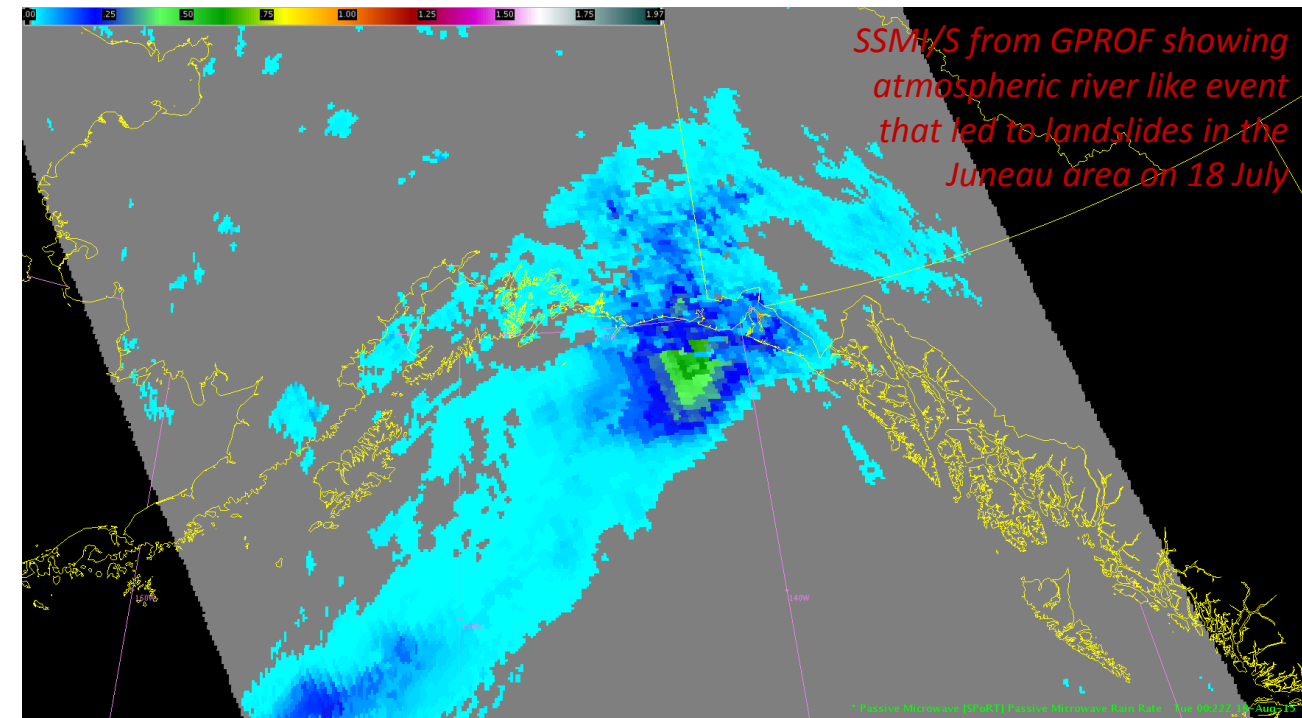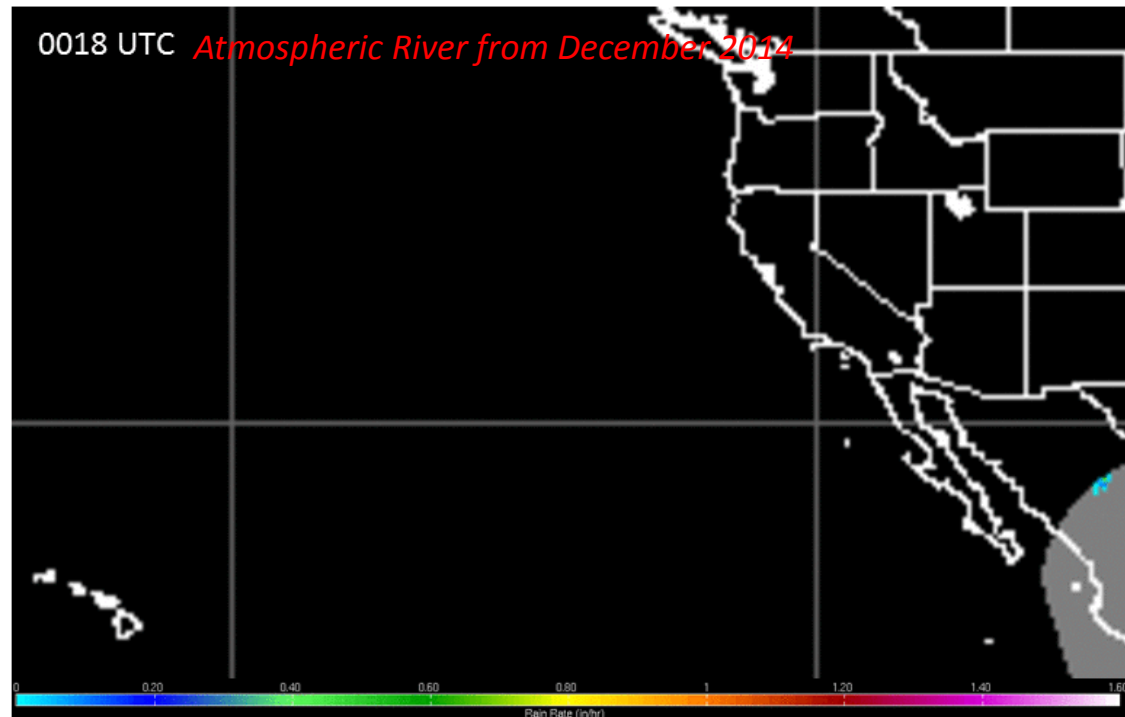
- L2 rain rate and L2 IMERG products are being processes for real-time distribution to forecasters
- Used primarily to supplement radar information in data-void regions (e.g., ocean, mountainous areas)
- These products will be made available via WMS and FTP/HTTPS for use in Korea, as needed, to either help supplement ground-based radar or help with validating precipitation rates

SST Composite Product

SPoRT Sea Surface Temperature (K)
US Dept of State Geographer
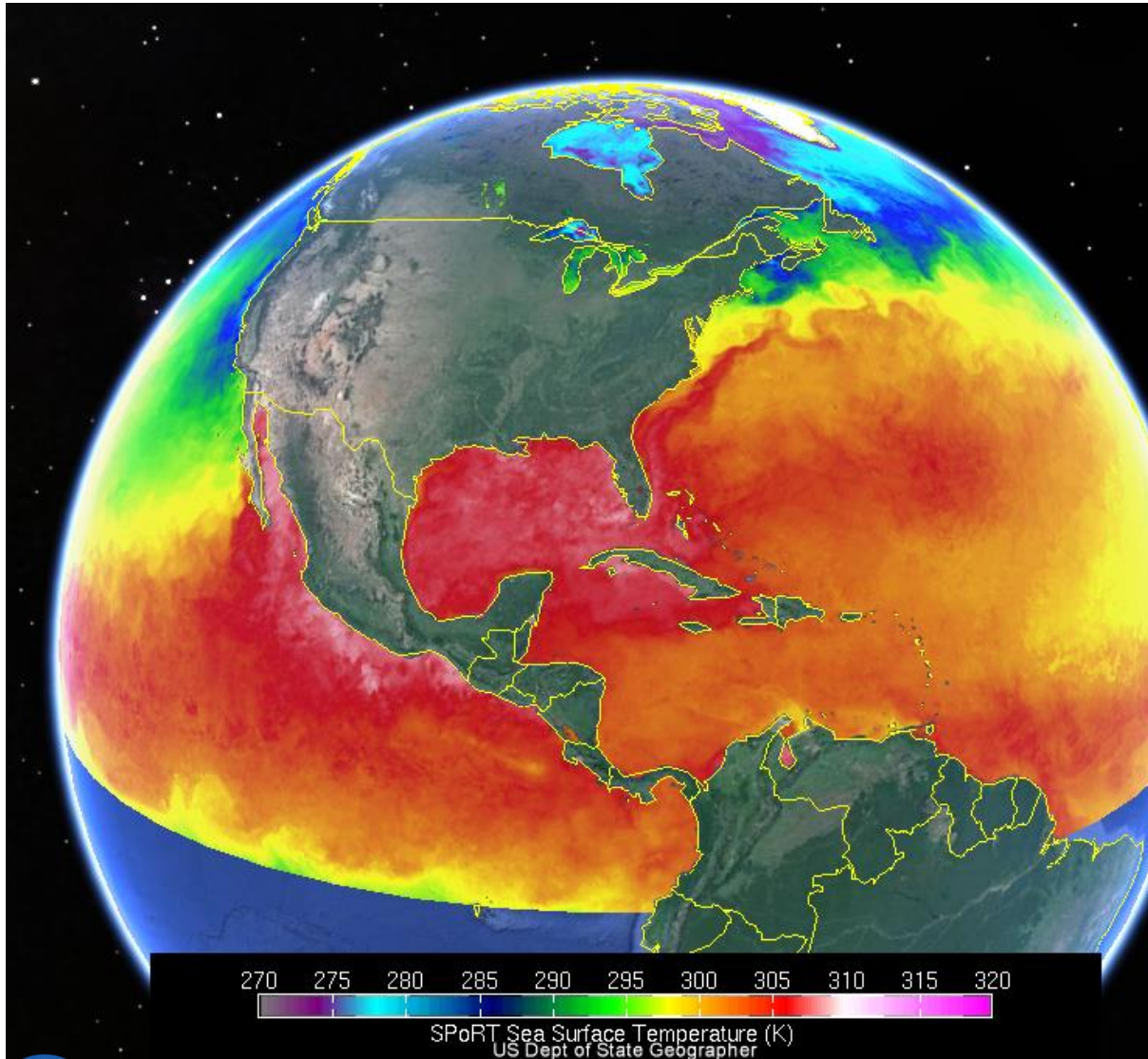
- NASA data from MODIS and VIIRS are blended with a background from an operational GOES/POES product to create a high-resolution (2-km) Sea Surface Temperature (SST) composite product
- Used for detecting high-resolution temperature gradients that can be important for sea breeze convection and tropical storm development and intensification
- SST products are integrated into NU-WRF for high-resolution numerical weather prediction applications.
- SST is now a completely N. Hemisphere project specifically for this activity

SST Product for Local Modeling

RTG_SST MODIS Composite MODIS - RTG

observed cumulus

convergence zones
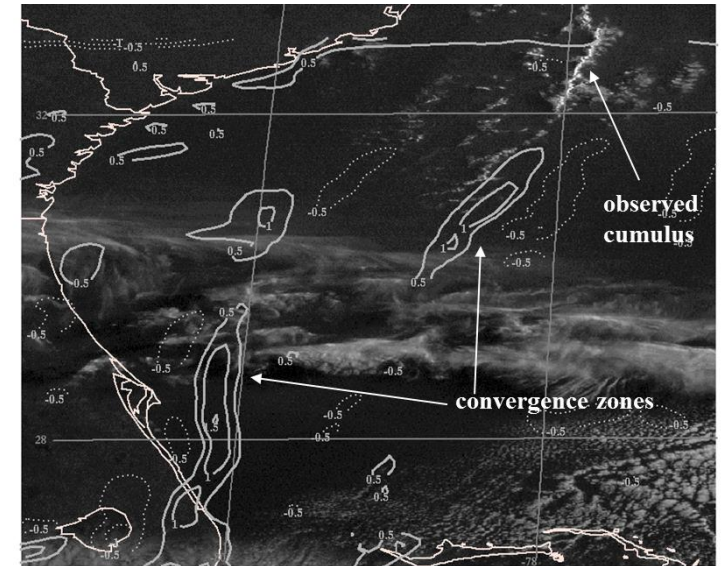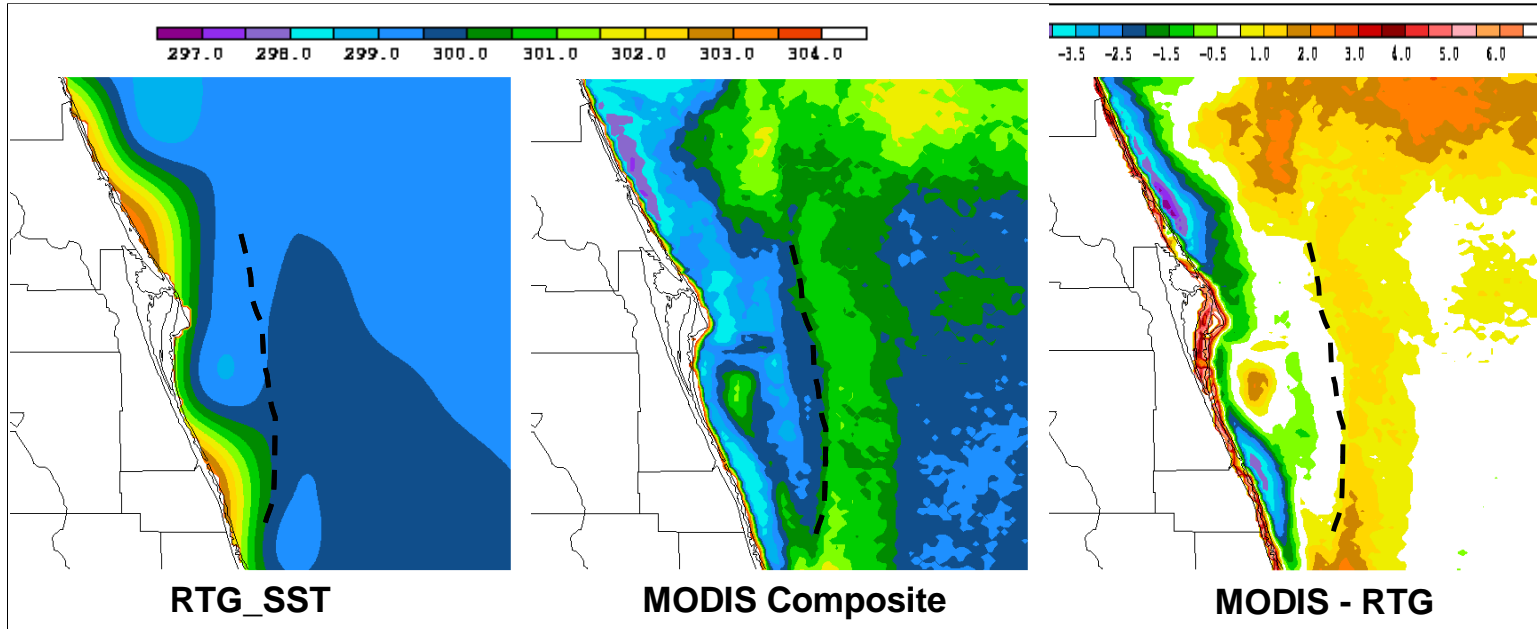
- High resolution SPoRT SST composite is able to capture coastal temperature gradients which drive low-level winds in models
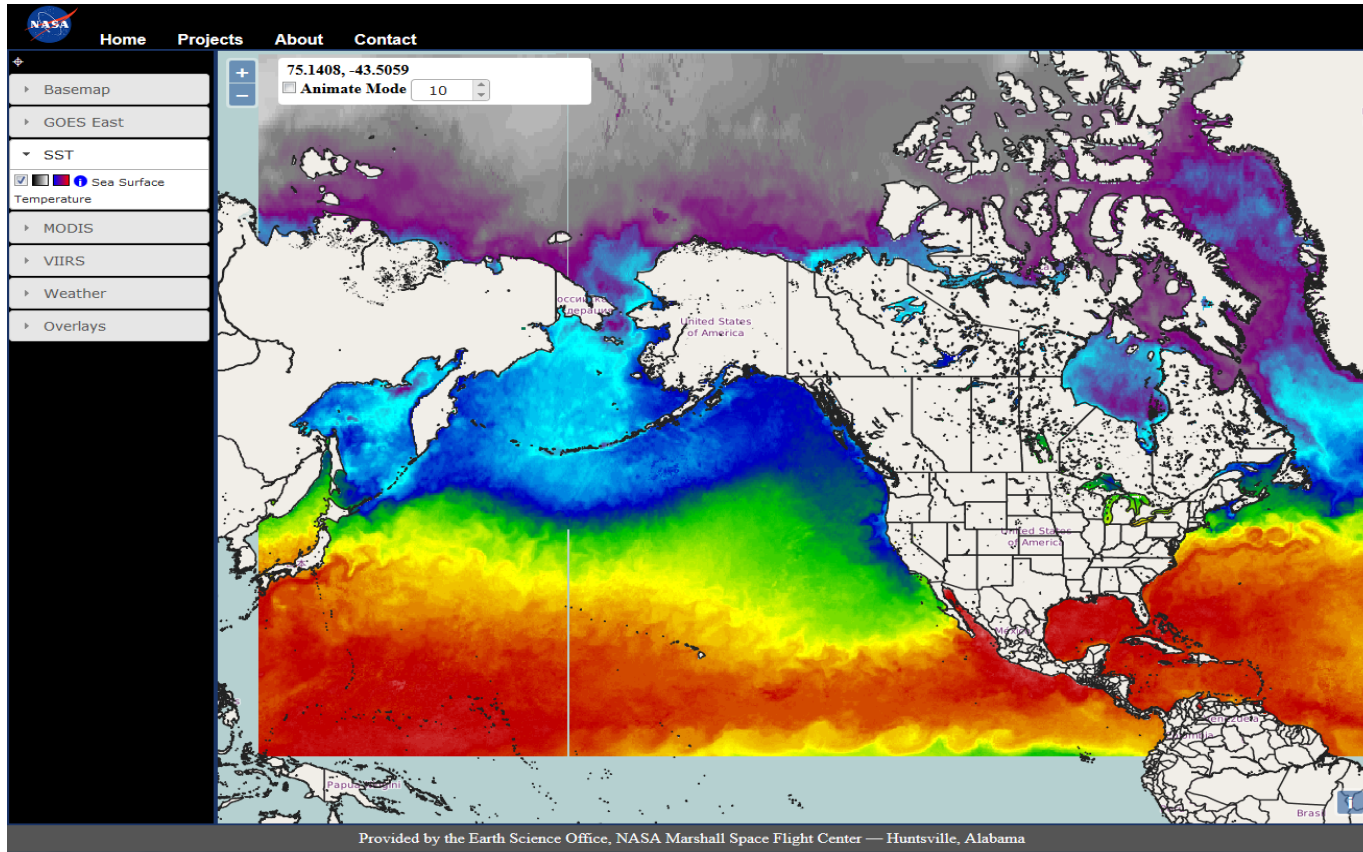- Latest version of the product does provide enough resolution to see intercoastal waterways (e.g., Indian River)
- SST product is integrated into WRF model and has been shown to better depict convergence zones in coastal environments and seabreeze circulations

Data Delivery
Web Mapping Service (WMS)

Index of /SPoRT/sst/northwestHemi/grib2/

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- Allows pan and zoom for dynamic, highest-resolution imagery (http://weather.msfc.nasa.gov/viewer/)
- Back-end server can be directly queried to obtain GIS-formatted datasets for ingest into local decision support

- Real-time products will be served using with FTP (current) and/or HTTPS (near-future) capabilities
- Scripts can be used to obtain real-time data

Summary

- SPoRT is a NASA and NOAA funded product at NASA Marshall Space Flight Center focused on transition of satellite observations to operational forecasters
- Expertise in areas of total lightning, remote sensing, modeling and data assimilation, and disaster response
- SPoRT has established a robust data management and dissemination system to support real-time data in support of weather operations

- SPoRT has been provided extra funding from NASA HQ to support real-time delivery of relevant/value-added remote sensing products and model output to support ICE-POP
- We will use WMS and/or FTP/HTTPS to share NASA-developed products in to decision makers in Korea